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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/610,237	07/05/2000	Michael N. Grimbergen	2813.D1/SILICO/JB	5355

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APPLIED MATERIALS, INC.  
2881 SCOTT BLVD. M/S 2061  
SANTA CLARA, CA 95050

EXAMINER

LUND, JEFFRIE ROBERT

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 12/06/2002

17

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/610,237

Applicant(s)

GRIMBERGEN ET AL.

Examiner

Jeffrie R. Lund

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12, 17-20, 26-32, 34-38 and 89-130 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 17-20, 26-32, 34-38 and 89-130 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 05 July 2000 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13, 14 6) ☐ Other:

## DETAILED ACTION

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 10, 11, 17, 18, 37, 38, and 89-128 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-66 of U.S. Patent No. 6,390,019 in view of Oshida et al, JP 9-126991.

Grimbergen et al ('019) teaches a reactor with a support, a gas distributor, a gas energizer, a radiation transmitting portion, a magnetic field source or an electromagnetic field, and an exhaust.

Grimbergen et al differs from the present claims in that Grimbergen et al does not teach a mask having a plurality of apertures with a specific shape and a specific aspect ratio.

Oshida et al teaches a mask, having a plurality of apertures with an aspect ratio, which is used to shield a radiation transmitting portion and reduce access of process gas to the radiation transmitting portion.

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The motivation for using the mask of Oshida et al in the apparatus of Grimbergen et al is to further reduce access of process gases to the radiation transmitting portion. The specific size, aspect ratio, and shape are obvious design limitations and it would be obvious to optimize the size, aspect ratio, and shape to minimize the access of the process gas to the radiation transmitting portion.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the mask of Oshida et al in the apparatus of Grimbergen et al.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

~~4.~~ Claims 26, 27, 29, 32, 35, and 36 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Oshida et al, JP 9-126991.

Oshida et al teaches the claimed invention in the specification (paragraph 26) and figure 4.

5. Claims 1-4, 8, 9, 12, 19, 20, 26-~~29~~, 32, 35, and 36 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Imatake et al, UD Patent 5,759,424.

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Imatake et al teaches a processing chamber 2 that includes: a support 22 for supporting a substrate 5; a gas distributor 9; a gas energizer 22 for coupling energy to the process gas; glass window (radiation transmitting portion) 15; and a mask 14 overlying the glass window having an aperture with an aspect ratio of 5:1. (See figures 1, 2, and 4, column 9 lines 1-20, and column 13 line 43 through column 14 line 40.)

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-9, 12, 19, 20, <sup>21-24</sup>129, and 130 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koshimizu, US Patent 5,290,383, in view of Oshida et al.

Koshimizu teaches a reactor with a support 3, a gas distributor 1a, a gas energizer 2, a radiation transmitting portion 11, and an exhaust 1b.

Koshimizu differs from the present claims in that Koshimizu does not teach a mask having an aperture with a specific aspect ratio (i.e. 0.25:1 to 3:1 or 1:1 to 12:1) and a specific shape.

Oshida et al teaches a mask, having a plurality of apertures with an <sup>1:1 to 12:1</sup> aspect ratio, which is used to shield a radiation transmitting portion and reduce access of process gas to the radiation transmitting portion.

The motivation for using the mask of Oshida et al in the apparatus of Koshimizu is to further reduce access of process gases to the radiation transmitting portion. The

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aspect ratio, size, and shape are obvious design limitations and it would be obvious to optimize the aspect ratio, size, and shape to minimize the access of the process gas to the radiation transmitting portion. It was held in *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), by the Federal Circuit that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. (Also see MPEP 2144.04 (d)) It has also been held that a change in shape is a matter of choice, which a person of ordinary skill in the art would have found obvious. (See *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) MPEP 2144.04(d))

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the mask of Oshida et al in the apparatus of Koshimizu and to optimize the aspect ratio and shape of the aperture.

8. Claims 6, 7, 31 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imatake et al.

Imatake et al was discussed above.

Imatake et al differs from the present invention in that Imatake et al does not teach a mask having an aperture with a specific size (i.e. diameter or width of about 0.1 to 50 mm, and a height of about 0.5 to 500 mm), and a specific shape.

The motivation for changing the size or shape of the aperture is to optimize the size and shape of the aperture as is discussed above.

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Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the size and shape of the aperture of Imatake et al.

9. Claims 28, 30, 31, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshida et al.

Oshida et al was discussed above.

Oshida et al differs from the present invention in that Imatake et al does not teach a mask having an aperture with a specific aspect ratio (i.e. 0.25:1 to 3:1 or 1:1 to 12:1), a specific size (i.e. diameter or width of about 0.1 to 50 mm, and a height of about 0.5 to 500 mm), and a specific shape.

The motivation for changing the aspect ratio, size or shape of the aperture is to optimize the aspect ratio, size, and shape of the aperture as is discussed above.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the aspect ratio and shape of the aperture of Imatake et al.

### ***Response to Arguments***

10. Applicant's arguments filed March 12, 2002 have been fully considered but they are not persuasive.

In regard to the argument that Oshida et al teaches that the optic filter described in paragraph 26 is a filter that filters away the milling particles or the process gas species from the optical system and that the filter acts by blocking the milling particles or process gas species, the examiner disagrees. The description found in paragraph 26 is an optical filter designed to filter the light. This optical filter also has the added benefit

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in that it limits the contamination of the light source. This is a result of the aspect ratio not the diameter of the holes. There is absolutely no teaching in Oshida et al of a physical gas filter i.e. physically blocking the particles.

In regard to the argument that Oshida et al does not teach selecting an aspect ratio that is selected to reduce deposition of process residues on the radiation transmitting portion, and has other considerations for optimizing the aspect ratio, the examiner disagrees. Oshida et al clearly teaches that the mask apertures have an aspect ratio that limits the deposition of process residues on the radiation transmitting portion (see the last line of paragraph 26). As to any other considerations in making the mask, the claim only requires that the aspect ratio be chosen to reduce deposition of process residues.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hayakawa et al, JP 04-160158, teaches a mask that has an aspect ratio (length to diameter) of  $50 \text{ mm}/4 \text{ mm} = 12.5:1$ .

12. Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on August 5, 2002 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609(B)(2)(i). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within



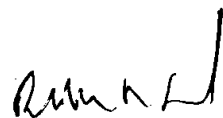
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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (703) 308-1796. The examiner can normally be reached on Monday-Thursday (6:30 am-6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Jeffrie R. Lund  
Primary Examiner  
Art Unit 1763

JRL  
December 4, 2002